

What is claimed is:

1. A transmission mechanism of an automotive vehicle for driving four wheels comprising  
a drive housing (24);  
5        a differential mechanism (13) including a right side bevel gear (14), a left side bevel gear (12) and a ring gear (11);  
            a driving power input shaft (1) disposed at the left upper portion of said drive housing (24);  
            a first dual tandem gear (2) mounted on said driving power input shaft (1);  
            a second dual tandem gear (3) slidably mounted on said driving power input shaft (1);  
10        a propeller shaft (20) disposed at said left middle portion of said drive housing (24);  
            a fourth gear (4) mounted on one end of said propeller shaft (20) ;  
            a sixth gear (6) mounted another end of said propeller shaft (20);  
            a fifth gear (5) mounted on said propeller shaft (20) close to said sixth gear (6) and engaged to said first dual tandem gear (2) and said ring gear (11);  
15        a third dual tandem gear (16) mounted on said propeller shaft (20) and engaged to said first dual tandem gear (2);  
            a core shaft (15) disposed at said left lower portion of said drive housing (24), on which said differential mechanism (13) is mounted;  
            a seventh gear (7) mounted on said core shaft (15) to engage said sixth gear (6);  
20        an eighth gear (17) connected with said core shaft (15) to engage said fourth gear (4);  
            a front right wheel output shaft (10) engaged with said core shaft (15);  
            a front left wheel output shaft (9) engaged with seventh gear (7);  
            a rear left wheel output shaft (18) disposed at the right lower portion of said driving housing

(24); and

a ninth gear (19) mounted on said rear left wheel output shaft (18),

wherein when said driving power input shaft (1) is driven, said second dual tandem gear (3) can be regulated to mesh with either said third dual tandem gear (16) or said first dual tandem gear 5 (2) so that the automotive vehicle can obtain different speeds, and wheels at the same side of the automotive vehicle can be driven at the same time.

2. The transmission mechanism of claim 1, wherein said front right wheel output shaft (10) is mounted within said front left wheel output shaft (9), and said front left wheel output shaft (9) is engaged said seven gear (7) with a slidable engaging member (8).

10 3. The transmission mechanism of claim 1, wherein said first dual tandem gear (2) includes a first larger gear (203) and an inner gear (205) at a side surface of said larger gear (203) to mesh with a second smaller gear (301) of said second dual tandem gear (3).

4. The transmission mechanism of claim 2, wherein said first dual tandem gear (2) includes a first larger gear (203) and an inner gear (205) at a side surface of said larger gear (203) to mesh 15 with a second smaller gear (301) of said second dual tandem gear (3).

5. The transmission mechanism of claim 2, wherein each of said second dual tandem gear (3) and said slidable engaging member (8) provides a recess (305, 802) at the outer surface thereof for connecting a fork.

6. The transmission mechanism of claim 4, wherein each of said second dual tandem gear (3) 20 and said slidable engaging member (8) provides a recess (305, 802) at the outer surface thereof for connecting a fork.

7. The transmission mechanism of claim 1, wherein said third dual tandem gear (16) includes a third larger gear (163) and a third smaller gear (161) to mesh with a larger gear (303) of said second dual tandem gear (3) and said first larger gear (203), respectively.

25 8. The transmission mechanism of claim 2, wherein said third dual tandem gear (16)

includes a third larger gear (163) and a third smaller gear (161) to mesh with a larger gear (303) of said second dual tandem gear (3) and said first larger gear (203), respectively.

9. The transmission mechanism of claim 3, wherein said third dual tandem gear (16) includes a third larger gear (163) and a third smaller gear (161) to mesh with a larger gear (303) of  
5 said second dual tandem gear (3) and said first larger gear (203), respectively.

10. The transmission mechanism of claim 4, wherein said third dual tandem gear (16) includes a third larger gear (163) and a third smaller gear (161) to mesh with a larger gear (303) of said second dual tandem gear (3) and said first larger gear (203), respectively.

11. The transmission mechanism of claim 5, wherein said third dual tandem gear (16)  
10 includes a third larger gear (163) and a third smaller gear (161) to mesh with a larger gear (303) of said second dual tandem gear (3) and said first larger gear (203), respectively.

12. The transmission mechanism of claim 6, wherein said third dual tandem gear (16) includes a third larger gear (163) and a third smaller gear (161) to mesh with a larger gear (303) of said second dual tandem gear (3) and said first larger gear (203), respectively.

15 13. The transmission mechanism of claim 1, wherein said second dual tandem gear (3) is splined to said driving power input shaft (1).

14. The transmission mechanism of claim 2, wherein said second dual tandem gear (3) is splined to said driving power input shaft (1).

15. The transmission mechanism of claim 3, wherein said second dual tandem gear (3) is  
20 splined to said driving power input shaft (1).

16. The transmission mechanism of claim 4, wherein said second dual tandem gear (3) is splined to said driving power input shaft (1).

17. The transmission mechanism of claim 5, wherein said second dual tandem gear (3) is splined to said driving power input shaft (1).

25 18. The transmission mechanism of claim 6, wherein said second dual tandem gear (3) is

splined to said driving power input shaft (1).

19. The transmission mechanism of claim 7, wherein said second dual tandem gear (3) is splined to said driving power input shaft (1).

20. The transmission mechanism of claim 12, wherein said second dual tandem gear (3) is  
5 splined to said driving power input shaft (1).